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| 09/925,013 | 08/08/2001 | Thomas Ullein | ULLEIN | 3599 |

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| EXAMINER |
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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/925,013
Filing Date: August 08, 2001
Appellant(s): ULLEIN ET AL.

MAILED

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GROUP 3600

Henry M. Feiereisen
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 5, 2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1-4, 6-15, 17, 18 and claims 19-22, 27-30, 32, and 33 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

| | | |
|-----------|-------------|---------|
| 5,931,754 | STIEF et al | 08-1999 |
| 6,361,458 | SMITH | 03-2002 |

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6-15, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Stief et al (US 5,931,754).

Stief et al disclose a chain tensioner, comprising: a tensioner piston (2) bearing upon a chain; a cylinder (3) guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber (8) for receiving hydraulic fluid; a leakage gap for migration of hydraulic fluid from the pressure chamber (see Fig 3, the gap formed between the chambers 8 and 9, and a gap 14), and a control member (7) for at least reducing the leakage gap in size when a pressure in the pressure chamber increases (col. 4 lines 7-10, during extension of the piston 2 the pressure in chamber 8 decreases and the ball opens from its seat so that fluid flows through the gap between

chambers 8 and 9 and the gap 14, during retraction of the piston 2 the pressure in chamber 8 increases to dampen the effects of the chain, and the ball of the valve closes the gap between the chambers 8 and 9 allowing fluid to only flow through the gap 14).

Re claim 2, Stief et al show the control member is a valve (7) having a valve body (unnumbered ball, see Fig 3) for bounding the leakage gap (see Fig 3), said valve body being configured for displacement to at least reduce the leakage gap in size, when the pressure in the pressure chamber increases (col. 4 lines 7-17).

Re claim 3, Stief et al show the valve body clears the leakage gap, when the pressure in the pressure chamber drops below a critical lower level, and at least reduces the leakage gap in size, when the pressure in the pressure chamber exceeds a critical upper level (col. 4 lines 7-12).

Re claim 4, Stief et al show a first stop (the retainer acts as a first stop to limit movement of the ball), wherein the valve body clears the leakage gap, when abutting against the first stop (see Fig 3).

Re claim 6, Stief et al show a valve spring (unnumbered valve spring, see Fig 3) for biasing the valve body against the first stop.

Re claim 7, Stief et al show a second stop (the top of element 1 closest to the ball), wherein the valve body is configured to abut the second stop (see Fig 3) when the pressure in the pressure chamber increases to thereby at least reduce the leakage gap in size (col. 4 lines 7-10).

Re claim 8, Stief et al show the second stop (the top of element 1 closest to the ball) forms a valve seat (see Fig 3) for the valve body (unnumbered ball, see Fig 3).

Re claim 9, Stief et al show the valve body (unnumbered ball, see Fig 3) is moved away from the first stop (unnumbered retainer) in opposition to a spring action applied by the valve spring (unnumbered spring, see Fig 3), as the pressure in the pressure chamber increases.

Re claim 10, Stief et al show the control member is a valve (7) in communication with the pressure chamber (8).

Re claim 11, Stief et al show the leakage gap is subdivided in a first leakage gap portion (a gap 14) and a second leakage gap portion (see Fig 3, the gap formed between the chambers 8 and 9) wherein the control member clears the first leakage gap portion when the pressure in the pressure chamber drops below a critical lower level, and at least reduces the second leakage gap portion in size, when the pressure in the pressure chamber exceeds a critical upper level (col. 4 lines 7-10).

Re claim 12, Stief et al show the control member is a valve (7) having a valve body (unnumbered ball, see Fig 3), which closes the second leakage gap portion when the pressure in the pressure chamber increases (col. 4 lines 7-17).

Re claim 13, Stief et al show a first stop (unnumbered retainer, see Fig 3), wherein the valve body abuts against the first stop to clear the second leakage gap portion when the pressure in the pressure chamber drops below the critical lower level.

Re claim 14, Stief et al show a second stop (unnumbered valve seat, see Fig 3), wherein the valve body abuts against the second stop to at least reduce the second leakage gap portion in size when the pressure in the pressure chamber exceeds the critical upper level (col. 4 lines 7-10).

Re claim 15, Stief et al show a valve spring (unnumbered valve spring, see Fig 3) for biasing the valve body against the first stop.

Re claim 17, Stief et al show the second stop is formed as valve seat (the top of element 1 closest to the ball) for the valve body (see Fig 3).

Re claim 18, Stief et al show a second stop (the top of element 1 closest to the ball), wherein the valve body abuts against the second stop to at least reduce the second leakage gap in size when the pressure in the pressure chamber exceeds the critical upper level (col. 4 lines 7-10), wherein the valve body (7) is disposed between the first and second stops (see Fig 3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 19-22, 27-30, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stief et al (US 5,931,754) in view of Smith (US 6,361,458).

Stief et al discloses a tensioner as described above but does not disclose the valve body configured as a plunger.

Smith shows the valve body is configured as a plunger (304), which is guided in the cylinder for longitudinal displacement (see Fig 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the tensioner of Stief et al to include the valve body

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configured as a plunger as taught by Smith in order to reduce mass and increase response time (col. 5 lines 20-30).

Re claim 20, Smith shows the plunger defines the leakage gap in concert with the cylinder (see Fig 2).

Re claim 21, Stief et al show a valve spring (unnumbered valve spring, see Fig 3) for biasing the valve body in a direction toward a first stop (unnumbered retainer, see Fig 3), said piston clearing the leakage gap, when abutting against the first stop (see Fig 3) and Smith shows and renders obvious the valve body being a plunger (see Fig 3).

Re claim 22, Stief et al show the valve body is moved away from the first stop to abut against a second stop when the pressure in the pressure chamber exceeds the upper critical level to close the leakage gap (col. 4 lines 7-10) and Smith shows and renders obvious the valve body being a plunger (see Fig 3).

Re claim 27, Smith shows a seat formed with circumferential grooves to define the passageways (see Fig 7).

Re claim 28, Stief et al show a tensioner piston (2) bearing upon a chain; a cylinder (3) guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber (8) for receiving hydraulic fluid; a leakage gap for migration of hydraulic fluid from the pressure chamber (see Fig 3, the gap formed between the chambers 8 and 9, and a gap 14), and a control member (7) for at least reducing the leakage gap in size when a pressure in the pressure chamber increases (col. 4 lines 7-10, during extension of the piston 2 the pressure in chamber 8 decreases and the ball opens from its seat so that fluid flows through the gap between chambers 8

and 9 and the gap 14, during retraction of the piston 2 the pressure in chamber 8 increases to dampen the effects of the chain, and the ball of the valve closes the gap between the chambers 8 and 9 allowing fluid to only flow through the gap 14), the control member (7) is movable between first and second stops (unnumbered valve seat and unnumbered retainer, see Fig 3) and spring-biased (unnumbered valve spring, see Fig 3) to seek a position against a first stop, and the control member (7) moves toward the second stop to at least reduce the fluid flow through the leakage gap, as the pressure in the pressure chamber rises (col. 4 lines 7-10) and Smith shows and renders obvious the first stop having passageways (326) to allow seepage of hydraulic fluid through the leakage gap (see Fig 7.

Re claim 29, Stief et al show the control member is a ball valve (7) disposed between the first and second stops (see Fig 3).

Re claim 30, Smith shows the control member is a plunger (302) disposed between the first and second stops (see Fig 2).

Re claim 32, Stief et al show a tensioner piston (2) bearing upon a chain; a cylinder (3) guiding the piston for movement in a direction of the chain and bounding with the piston a pressure chamber (8) for receiving hydraulic fluid; a first leakage gap (14) formed between adjacent wall surfaces of the cylinder and the piston for migration of hydraulic fluid from the pressure chamber (8); a second leakage gap (unnumbered gap between the chambers 8 and 9) for migration of hydraulic fluid from the pressure chamber; and a control member (7) for regulating a fluid flow through the second leakage gap in dependence on a pressure in the pressure chamber (col. 4 lines 7-10)

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and the control member reduces a fluid flow through the second leakage gap, as the pressure in the pressure chamber rises (col. 4 lines 7-10).

Re claim 33, Stief et al show the control member closes the second leakage gap, when the pressure in the pressure chamber exceeds an upper limit (col. 4 lines 7-10).

Allowable Subject Matter

5. Claims 5, 16, 23 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(11) Response to Argument

The application of Ullein relates to a chain tensioner having a control member, which is exclusively responsive to pressure in the pressure chamber to regulate a flow of hydraulic fluid through a leakage gap for controlling damping performance of the chain tensioner. The tensioner of Ullein consists of a cylinder, a spring biased piston, a first check valve that controls fluid through an inlet passageway into a first chamber, and a second check valve biased by a spring that controls fluid through the first chamber and a second chamber. There is a space between the cylinder and the piston, which is a first leakage gap. The passageway between the first chamber and the second chamber is referred to as the second leakage gap.

Figure 1 shows the piston in the extended position when the piston is tensioning the chain, during the extension of the piston fluid flows between the first chamber and the second chamber and the gap between the cylinder and the piston. Figure 2 shows the piston in the retracted position when the piston is being pressed inward by the

chain, during the retraction of the piston the pressure will reach a pre-determined level and the second check valve will close the second leakage gap, but fluid will continue to flow through the first leakage gap.

The applicant argues that the Stief reference fails to meet the limitations of the claims because the fluid is flowing from the chamber 9 to the chamber 8. Claim 1 only states there is a leakage gap for migration of hydraulic fluid from the pressure chamber and a control member reduces the leakage gap in size when "pressure in the pressure chamber increases". In order for fluid to move from the chamber 9 into the chamber 8, the pressure in chamber 9 must higher than the pressure in chamber 8. Therefore chamber 9 is also a pressure chamber and fluid is flowing from the chamber, and therefore the Stief reference meets the limitation of the claims.

The applicant argues that the Stief reference fails to teach or suggest a valve to control the size of the leakage gap. Structurally there is no difference in the valve claimed in the application and the valve of the Stief reference. The valve of Stief consists of a ball, a first ball seat (top surface of 1), a second ball seat (retainer), and a spring to bias the ball and close the leakage gap during retraction. The Stief reference fails to disclose a second valve, but a second valve is not claimed in the application of Ullein.

It is also argued that the Stief reference fails to disclose the subdivision of the leakage gap into two portions for the outflow of fluid. The Stief reference also has two leakage gaps, the passageway between chambers 8 and 9 and the gap 14. When the

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pressure reaches a pre-determined level the control member 7 closes the gap between the chambers 8 and 9 and fluid is able to flow only through the gap 14.

The Smith reference is only used to show that it is known in the art to use a plunger as a control member between two chambers in order to reduce mass and increase response time. It is also used to teach that it is well known to have grooves or passageways on a ball stop of the valve. Figure 2 of the Smith reference show a first embodiment of the passageways (326) and Figure 7 show a second embodiment of the passageways (unnumbered). The Smith reference is not relied upon to teach damping action.

The tensioner of Stief and the tensioner of Ullein are similar in several ways. Both tensioners have a piston, a cylinder, at least one pressure chamber, two leakage gaps, and a control member, which reduces one of the leakage gaps in size.

The tensioner of the Stief et al reference does not work exactly like the tensioner of the Ullein tensioner, but the tensioner of the Ullein application is anticipated by the Stief et al reference.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,

VAJ

July 12, 2004

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